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| 10/692,370 | 10/23/2003 | Tetsushi Tanada | 9281-4713 | 9330 |

7590 03/25/2004

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| EXAMINER |
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DI GRAZIO, JEANNE A

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| ART UNIT | PAPER NUMBER |
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2871

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,370

Applicant(s)

TANADA ET AL.

Examiner

Jeanne A. Di Grazio

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 7-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 102303.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

Priority

Priority to Japanese Patent Application No. 2000-282623 (Sept. 18, 2000) is claimed.

Preliminary Amendment

Per Preliminary Amendment of October 23, 2003, claims 1-6 have been cancelled. New claims 7-9 have been added.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors.

In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (APA), Figure 5, in view of Chung et al. (US 4,456,336).

Per claim 7: APA Figure 5 teaches and discloses a conventional transfective liquid crystal display. Figure 5 comprises the following conventional elements: a pair of substrates (110 and 120) which oppose each other with a liquid crystal layer (130) therebetween, a light source (backlight, 105) provided on an exterior of one of the substrates (110), and a reflector (119) with a reflection film (119a) on the reflector (119) surface.

APA does not appear to explicitly disclose a transfective layer comprising at least an organic film and a metallic reflection film disposed on an inner face of one of the substrates, a plurality of concave portions contiguously formed on a surface of the organic film, an inner surface of each concave portion constituting a part of spherical surface, wherein a depth of the concave portions is in the range of 0.1 to 3 μm , an inclination angle of the inner surface of each of the concave portions in the range of -30 degrees to $+30$ degrees, and a pitch of adjoining concave portions is in the range of 5 to 50 μm .

Chung teaches and discloses a high brightness internal reflector for liquid crystal displays and its method of fabrication. Chung teaches and discloses, with reference to Figures 1A and 1B, a glass plate (12) with a micro-lenticular surface formed thereon (Detailed Description of the Invention, Column 2, Lines 56-60). The micro-lenticular surface consists of concave cavities that touch each other at a boundary (Applicant's "contiguously formed") (cavities 14). These cavities (14) take the shape of a spherical indented surface. Please note, that Applicant's enabling disclosure does not appear to call forth the variance of the radius of curvature of the spherical surface; therefore, Chung's micro-lenticular concave cavities (14) meet Applicant's recitation of "an inner surface of each concave portion constituting a part of a spherical surface." A reflective layer (16) is formed on the glass plate (12). The reflective layer (16) is made of preferably

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aluminum or silver and most preferably silver (Column 3, Lines 6-8). An organic film (18) is on the glass plate (12)(Column 3, Lines 15-18), and the contiguous, lenticular, concave cavities are formed in the organic film (Figure 1B). Please note that the organic film and reflective layer are formed on the inner surface of the glass plate. The depth of the concave cavities is in the range of from about 0.5 to 2.5 μ m and or preferably, 1 to 2 μ m (Column 2, Lines 59-66). With reference to Figures 1A and 1B, the inclination angle of the inner surface of the concave cavities falls within Applicant's recited range. Because the depth of the cavities and inclination angle of the cavities appear to overlap Applicant's recited ranges, it may be presumed that the pitch of adjoining concave portions also meets Applicant's range.

The above described structure enables a minimized reduction in brightness (Column 3, Lines 34-39).

Chung is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to optimize brightness with a selected range of pitch, inclination angle, and cavity depth.

Optimization of a results effective variable requires only routine skill in the art (MPEP 2144.05.II).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify APA Figure 5 in view of Chung to optimize brightness as a results effective variable and, as such, optimization of a results effective variable requires only routine skill in the art.

Per claim 8: APA Figure 5 teaches and discloses a conventional transflective liquid crystal display. Figure 5 comprises the following conventional elements: a pair of substrates (110

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and 120) which oppose each other with a liquid crystal layer (130) therebetween, a light source (backlight, 105) provided on an exterior of one of the substrates (110), and a reflector (119) with a reflection film (119a) on the reflector (119) surface. Please note that per Figure 5, the reflector and reflection film are formed on the outer face of the substrate (110).

APA does not appear to explicitly disclose a plurality of concave portions contiguously formed on a surface of the organic film, an inner surface of each concave portion constituting a part of a spherical surface, wherein a depth of the concave portions is in the range of 0.1 to 3 μm , an inclination angle of the inner surface of each of the concave portions in the range of -30 degrees to $+30$ degrees, and a pitch of adjoining concave portions is in the range of 5 to 50 μm .

Chung teaches and discloses a high brightness internal reflector for liquid crystal displays and its method of fabrication. Chung teaches and discloses, with reference to Figures 1A and 1B, a glass plate (12) with a micro-lenticular surface formed thereon (Detailed Description of the Invention, Column 2, Lines 56-60). The micro-lenticular surface consists of concave cavities that touch each other at a boundary (Applicant's "contiguously formed") (cavities 14). These cavities (14) take the shape of a spherical indented surface. Please note, that Applicant's enabling disclosure does not appear to call forth the variance of the radius of curvature of the spherical surface; therefore, Chung's micro-lenticular concave cavities (14) meet Applicant's recitation of "an inner surface of each concave portion constituting a part of a spherical surface." A reflective layer (16) is formed on the glass plate (12). The reflective layer (16) is made of preferably aluminum or silver and most preferably silver (Column 3, Lines 6-8). An organic film (18) is on the glass plate (12)(Column 3, Lines 15-18), and the contiguous, lenticular, concave cavities are formed in the organic film (Figure 1B). The depth of the concave cavities is in the range of from

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about 0.5 to 2.5 μ m and or preferably, 1 to 2 μ m (Column 2, Lines 59-66). With reference to Figures 1A and 1B, the inclination angle of the inner surface of the concave cavities falls within Applicant's recited range. Because the depth of the cavities and inclination angle of the cavities appear to overlap Applicant's recited ranges, it may be presumed that the pitch of adjoining concave portions also meets Applicant's range.

The above described structure enables a minimized reduction in brightness (Column 3, Lines 34-39).

Chung is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to optimize brightness with a selected range of pitch, inclination angle, and cavity depth.

Optimization of a results effective variable requires only routine skill in the art (MPEP 2144.05.II).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify APA in view of Chung to optimize brightness as a results effective variable and, as such, optimization of a results effective variable requires only routine skill in the art.

Per claim 9: Chung discloses a reflective film thickness in the range of 1,000 to 15,000 Angstroms (Column 6, Lines 53-55).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 7 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,671,015 B2.

Per claim 7: With respect to US 6,671,015 B2, a pair of substrates which oppose each other with a liquid crystal layer therebetween (Claim 1, Column 13, Lines 13-14), a light source provided on an exterior of one of the substrates (Claim 1, Column 13, Lines 16-17), at least an organic film and a metallic reflection film disposed on an inner face of one of the substrates (Claim 1, Column 14, Lines 1-3), wherein a plurality of concave portions are contiguously formed on a surface of the organic film, an inner surface of each concave portion constituting a part of spherical surface (Claim 1, Column 14, Lines 4-7), wherein a depth of the concave portions is in the range of 0.1 to 3 μ m, an inclination angle of the inner surface of each concave portion is in the range of -30 degrees to +30 degrees, and a pitch of adjoining concave portions is in the range of 5 to 50 μ m (Claim 1, Column 14, Lines 9-13).

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Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of US 6,671,015 B2 do not specifically set forth a transfective layer in the body of the claim.

However, claims 1 and 2 of US 6,671,015 B2 are drawn to a transfective liquid crystal display.

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to incorporate a transfective layer into a transfective display for at least satisfactory brightness and ease in visible display in both reflective and transmissive modes (Column 2, Lines 37-40).

Claims 8 and 9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,671,015 B2 in view of APA Figure 5.

Per claim 8: With respect to US 6,671,015 B2, a pair of substrates which oppose each other with a liquid crystal layer therebetween (Claim 1, Column 13, Lines 13-14), a light source provided on an exterior of one of the substrates (Claim 1, Column 13, Lines 16-17), at least an organic film and a metallic reflection film disposed on one of the substrates (Claim 1, Column 14, Lines 1-3), wherein a plurality of concave portions are contiguously formed on a surface of the organic film, an inner surface of each concave portion constituting a part of spherical surface (Claim 1, Column 14, Lines 4-7), wherein a depth of the concave portions is in the range of 0.1 to 3 μ m, an inclination angle of the inner surface of each concave portion is in the range of -30 degrees to +30 degrees, and a pitch of adjoining concave portions is in the range of 5 to 50 μ m (Claim 1, Column 14, Lines 9-13).

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Claims 1 and 2 do not appear to explicitly specify that the resin base and metallic reflection film are formed on an outer face of one of the substrates.

APA Figure 5 teaches and discloses a conventional transflective display featuring reflector (119) and reflection film (119a) formed on an outer surface of substrate (110).

APA Figure 5 is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to form a resin base and metallic reflection film on an outer surface of a conventional transflective display as part of a conventional transflective display.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify claims 1 and 2 of US 6,671,015 B2 in view of APA Figure 5 for a conventional transflective display.

Per claim 9: The metallic reflection film has a thickness of 80 to 500 Angstroms (Claim 1, Column 14, Lines 7-8).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289.

The examiner can normally be reached on M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio

Robert Kim, SPE

Patent Examiner
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